

FORM PTO-1390
(REV 10-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

MRKS/0029

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/762699

INTERNATIONAL APPLICATION NO.
PCT/GB99/02710INTERNATIONAL FILING DATE
16 AUGUST 1999 (16.08.1999)PRIORITY DATE CLAIMED
24 AUGUST 1998 (24.08.1998)

TITLE OF INVENTION METHODS AND APPARATUS FOR CONNECTING TUBULARS USING A TOP DRIVE ✓

APPLICANT(S) FOR DO/EO/US WEATHERFORD/LAMB, INC., ET AL
WET RAS, Bernd - 6009.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).
4. ☒ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (UNSIGNED)
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 16 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
International Search Report (Appended to Published Application)
International Preliminary Examination Report

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S DOCKET NUMBER																															
<p>17. <input checked="" type="checkbox"/> The following fees are submitted:</p> <p>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :</p> <p>Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1000.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00</p> <p>International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00</p> <p>International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00</p> <p style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</p>				<p>CALCULATIONS PTO USE ONLY</p>																															
<p>Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;">CLAIMS</th> <th style="width:20%;">NUMBER FILED</th> <th style="width:20%;">NUMBER EXTRA</th> <th style="width:15%;">RATE</th> <th style="width:15%;">AMOUNT</th> <th style="width:15%;"></th> </tr> </thead> <tbody> <tr> <td>Total claims</td> <td>14 - 20 =</td> <td>0</td> <td>X \$18.00</td> <td>\$ 0.00</td> <td></td> </tr> <tr> <td>Independent claims</td> <td>3 - 3 =</td> <td>0</td> <td>X \$80.00</td> <td>\$ 0.00</td> <td></td> </tr> <tr> <td colspan="4">MULTIPLE DEPENDENT CLAIM(S) (if applicable)</td> <td>+ \$270.00</td> <td>\$</td> </tr> <tr> <td colspan="4" style="text-align: right;">TOTAL OF ABOVE CALCULATIONS =</td> <td>\$ 860.00</td> <td></td> </tr> </tbody> </table> <p><input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.</p> <p style="text-align: right;">SUBTOTAL =</p>				CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	AMOUNT		Total claims	14 - 20 =	0	X \$18.00	\$ 0.00		Independent claims	3 - 3 =	0	X \$80.00	\$ 0.00		MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ \$270.00	\$	TOTAL OF ABOVE CALCULATIONS =				\$ 860.00		<p>\$ 860.00</p>	
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<p>Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).</p> <p style="text-align: right;">TOTAL NATIONAL FEE =</p>				<p>\$</p> <p>\$860.00</p>																															
<p>Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property</p> <p style="text-align: right;">TOTAL FEES ENCLOSED =</p>				<p>\$</p>																															
				Amount to be	\$																														
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				charged:	\$ 860.00																														

a. ☐ A check in the amount of \$_____ to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 20-0782 in the amount of \$ 860.00 to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 20-0782/MRKS/ A duplicate copy of this sheet is enclosed.
0029/WBP

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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SIGNATURE:
WILLIAM BRUCE PATTERSON

NAME
 34,102

REGISTRATION NUMBER

DATE 2/8/01

09/762699

532 Rec'd PCT/PTO 08 FEB 2001

PATENT
Atty. Dkt MRKS/0029

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: B. D. Pietras

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Group Art Unit: Unknown

Serial No.: Unassigned

Examiner: Unknown

Filed: Herewith

For: Methods and Apparatus for
Connecting Tubulars Using A
Top Drive

BOX PCT
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

CERTIFICATE OF MAILING
37 C.F.R. 1.10

I hereby certify that this correspondence is being deposited on
8 Feb, 2001, with the United States Postal Service as Express
Mail No. EL675048391US, in an envelope addressed to: BOX PCT,
Assistant Commissioner for Patents, Washington, D.C. 20231.

8 Feb 2001
Date Signature

PRELIMINARY AMENDMENT

Prior to examination, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend the following claims:

Claim 2, line 1, please delete "or 2".

Claim 3, line 1, please delete "or 2".

Claim 5, line 1, please delete "claims 2 to 4" and insert --claim 2--.

Claim 6, line 1, please delete "claims 2 to 5", and insert --claim 2--.

Claim 7, line 1, please delete "any preceding claim", and insert --claim 1--.

Claim 9, line 1, please delete "any preceding claim" and insert --claim 1--.

Claim 10, line 1, please delete "any preceding claim" and insert --claim 1--.

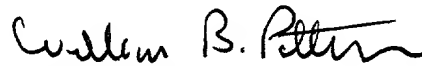
Claim 12, line 1, please delete "or 11" and insert.

Claim 13, line 1, please delete "any preceding claim" and insert --claim 1--.

REMARKS

The above amendments have been made to remove the multiple dependencies in the claims. Early and favorable action in connection with this application is respectfully requested.

Respectfully submitted,



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METHODS AND APPARATUS FOR CONNECTING TUBULARS USING A TOP
DRIVE

This invention relates to methods and apparatus for facilitating the connection of
5 tubulars using a top drive and is more particularly, but not exclusively for facilitating
the connection of a section or stand of casing to a string of casing.

In the construction of wells such as oil or gas wells, it is usually necessary to
line predrilled holes with a string of tubulars known as casing. Because of the size of
the casing required, sections or stands of say two sections of casing are connected to
10 each other as they are lowered into the well from a platform. The first section or stand
of casing is lowered into the well and is usually restrained from falling into the well by
a spider located in the platform's floor. Subsequent sections or stands of casing are
moved from a rack to the well centre above the spider. The threaded pin of the section
or stand of casing to be connected is located over the threaded box of the casing in the
15 well to form a string of casing. The connection is made-up by rotation therebetween.

It is common practice to use a power tong to torque the connection up to a
predetermined torque in order to perfect the connection. The power tong is located on
the platform, either on rails, or hung from a derrick on a chain. However, it has recently
been proposed to use a top drive for making such connection either alone or in
20 combination with a power tong.

It has been observed that sections or stands of tubulars are often not as uniform
as desired. In particular, the sections or stands of tubulars are often not straight. The
top drive is in perfect alignment with the centre of the spider in the platform of an oil or

gas rig. However, a section or stand of tubulars located in the spider would not always be in alignment with the top drive.

According to a first aspect of the present invention there is provided an apparatus for facilitating the connection of tubulars using a top drive, the apparatus
5 comprising a stator attachable to said top drive, and a supporting member for supporting a tool wherein means are provided to allow substantially horizontal movement of said supporting member.

According to a second aspect of the present invention there is provided a method for facilitating the connection of tubulars using a top drive, the method comprising the
10 steps of attaching a tool to the top drive using a supporting member and adjusting the supporting member to cause the tool to be displaced horizontally relative to the top drive.

For a better understanding of the present invention and in order to show how the same may be carried into effect reference will now be made, by way of example, to the
15 accompanying drawings, in which:

Figure 1 is a side view in perspective of an apparatus in accordance with an embodiment of the invention in use;

Figure 2 is an enlarged view of parts of Figure 1, with parts inserted in a tubular and with parts cut away;

20 Figure 3 is an enlarged cross-sectional view in perspective of part of the apparatus of Figure 1;

Figure 4 is an enlarged view of parts of the supports of Figure 1 in a displaced position;

Figure 5 is an enlarged view of parts of the apparatus of Figure 1 in a second displaced position;

Figure 6 shows the apparatus of Figure 1 in a further stage of operation; and

Figure 7 shows a second embodiment of the present invention.

5 Referring to Figure 1 there is shown an apparatus which is generally identified by reference numeral 1.

The apparatus 1 depends from a rotor 2' of a top drive 3. A tool 4 for gripping a tubular depends from the lower end of the apparatus 1. A rigid guide member 5 is provided to guide the rotor 2 of the apparatus 1. The rigid guide member 5 is fast with a
10 stator 5' of the top drive 3. The rotor 2' of the top drive 3 is coupled by a threaded connection to the rotor 2 of the apparatus 1. The rigid guide member 5 may be provided with a clamp for clamping the rotor 2 of the apparatus 1 so that the threaded connection to the rotor 2' of the top drive 3 can be made, after which the clamp would be released.

An elevator 6 is provided on the end of bails 7, 8 which are hung from the top
15 drive 3. Piston and cylinders 9, 10 are arranged between the bails 7, 8 and the top drive 3 for moving the elevator 6 from below the top drive 3 to an out of the way position.

Referring now to Figure 2, there is shown the apparatus 1 which comprises a plate 11 which is fixed to a connecting tubular 12 by a collar 13. The connecting
tubular 12 passes through a hole 14 in rigid body 5 and connects with the rotor 2 (Figure
20 1). The plate 11 has two projections 15 and 16 which have holes 17 for accommodating axles 18 which are rotationally disposed therein. The axles 18 are integral with a rigid body 19. A slider 20 is arranged on runners 21 on either side of the rigid body 19. Arms 22 are connected at one end to the slider 20 via spherical bearings 23.

The other end of arms 22 are connected to a supporting member 24 via spherical bearings 25.

The arms 22 and are provided with lugs 26 to which one end of a piston and cylinder 28 and 29 is attached and are movable thereabout. The other end of each
5 piston and cylinder 28 and 29 is attached to lugs 30 and 31 and is movable thereabout. The lugs 30 and 31 are fixed to plate 11.

A mud pipe 32 is provided between the plate 11 and the supporting member 24 for carrying mud to the inside of a tubular therebelow. The mud pipe 32 is located in cylindrical sections 33 and 34 which are attached to the plate 11 and the supporting
10 member 24. The mud pipe 32 is provided with a lobe 35 formed on the outer surface thereof and is located in a corresponding recess 36 in a cylindrical section 33 (Figure 3). A lobe 37 is slidably arranged on the lower end of the mud pipe 32 with an o-ring seal 38 arranged therebetween to inhibit fluid from leaking therebetween. The lobe 37 is located in a corresponding recess 39 in cylindrical section 34. This arrangement allows
15 a ball and socket type movement between the plate 11 and the supporting member 24 and relative longitudinal movement therebetween.

Referring back to Figure 2, a tool 4 for gripping a tubular is fixed and depends from the supporting member 24 of the apparatus 1. Such a tool may be arranged to be inserted into the upper end of the tubular, with gripping elements of the tool being
20 radially displaceable for engagement with the inner wall of the tubular so as to secure the tubular to the tool.

In use, a tubular 40 to be connected to a tubular string held in a spider (not shown), is located over the tool 4. The tool 4 grips the tubular 40. The apparatus 1 and the tubular 40 are lowered by moving the top drive so that the tubular 40 is in close

proximity with the tubular string held in the spider. However, due to, amongst other things, manufacturing tolerances in the tubular 40, the tubular often does not align perfectly with the tubular held in the spider. The apparatus 1 allows minor vertical and horizontal movements to be made. The piston and cylinders 28 and 29 allow vertical movement, and may be controlled remotely. The piston and cylinders 28 and 29 may be of the pneumatic compensating type, i.e. their internal pressure may be adjusted to compensate for the weight of the tubular 40 so that movement of the tubular may be conducted with minimal force. Pneumatic compensating piston and cylinders also reduce the risk of damage to the threads of the tubulars. This can conveniently be achieved by introducing pneumatic fluid into the piston and cylinders 28 and 29 and adjusting the pressure therein. The piston and cylinders 28 and 29 may be hydraulic or may be hydraulic and provided with pneumatic bellows.

Tubular manipulating equipment such as stabbing guides may be used to direct the pin (not shown) of the tubular 40 into the box of the tubular string held in the spider. The apparatus 1 allows horizontal movement of the tubular 40 relative to the top drive 3. Once the tubular 40 is in line with the tubular string, the top of the tubular 40 may be brought in line with the top drive which may be carried out with pipe handling equipment. The top drive 3 is now in direct alignment with the tubular string held in the spider, and can now rotate the apparatus 1 and hence the tool 4 and the tubular 40 to perfect a connection between the tubular 39 and the tubular string.

Figure 4 shows the supporting member 24, the tool 4 and the tubular 40 laterally in a 'Y' direction out of alignment with the top drive 3. The mud pipe 32 has moved in recesses 36 and 39 and longitudinally in relation to o-ring seals 38. The piston and

cylinders 28 and 29 have moved about lugs 26, 27, 30 and 31. Arms 22 and 22' have moved about spherical bearings 23, 23', 25 and 25'.

Figure 5 shows the supporting member 24, the tool 4 and the tubular member 40 laterally in an 'x' direction. The mud pipe 32 has moved in recesses 36 and 39 and
5 longitudinally in relation to o-ring seals 38. The piston and cylinders 28 and 29 have moved about lugs 26, 27, 30 and 31. Rigid member 19 has moved about axles 18 and 18' and spherical bearings 23.

Figure 6 shows the elevator 6 swung in line with the top drive 3 by rotation of the piston and cylinders 9 and 10 acting on bails 7 and 8. The elevator 3 is located
10 below a box 41 of tubular 40. The tubular 40 may be released from engagement with the tool 4. The elevator 6 may now be raised to take the weight of the tubular 40 and tubular string. The tubular string may now be lowered into the well.

Figure 7 is a second embodiment of the present invention and is generally similar to that of Figures 1 to 6 further incorporating adjusting piston and cylinders 42
15 and 43 so that actuation of the piston and cylinders 42 and 43 can move the supporting member 24, the tool 4 and the tubular 40 depending therebelow in a horizontal plane in an x and y axis.

The piston and cylinder 42 is arranged between the plate 11 and the rigid member 19 on lugs 44 and 45. Actuation of the piston and cylinder 42 moves the
20 supporting member 24, the tool 4 and the tubular 40 along a generally x-axis about axles 18 and 18'.

The piston and cylinder 43 is arranged between an extension of arm 22 and slider 20 on lugs 46 and 47. Actuation of the piston and cylinder 43 moves the supporting member 24, the tool 4 and the tubular 40 along a generally y-axis about

spherical bearings 23, and 25 and the corresponding spherical bearings arranged in arm 22'.

The piston and cylinders 42 and 43 may be hydraulically or pneumatically operable and may be controlled via a remote control unit (not shown).

- 5 In use, a tubular 40 may be gripped by the tool 4 in the way described above and lowered into close proximity with the tubular string held in a spider. The adjusting piston and cylinders 42 and 43 may then be actuated to obtain alignment of the pin of the tubular 40 with the box of the tubular string held in the spider. The tubular 40 may then be rotated to obtain a partial connection or be held in alignment with an additional
- 10 tool. The piston and cylinders 42 and 43 may then be returned to their original positions to obtain alignment with the top drive 3. The top drive 3 may then be used to torque the connection up to a predetermined torque to complete the connection.

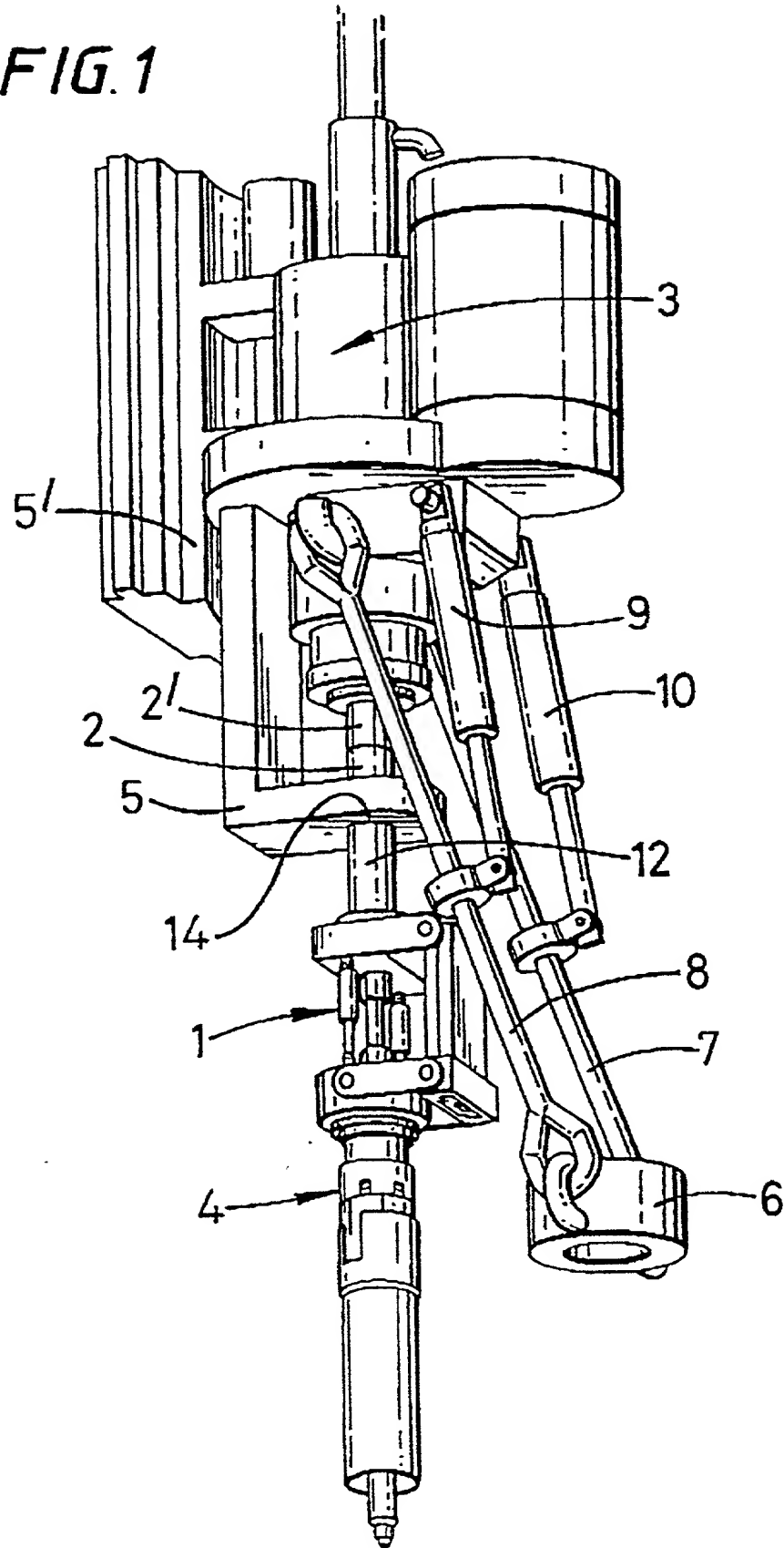
It is envisaged that various modifications may be made to the above described embodiments, such as using a hydraulic motor in place of the supporting member 24.

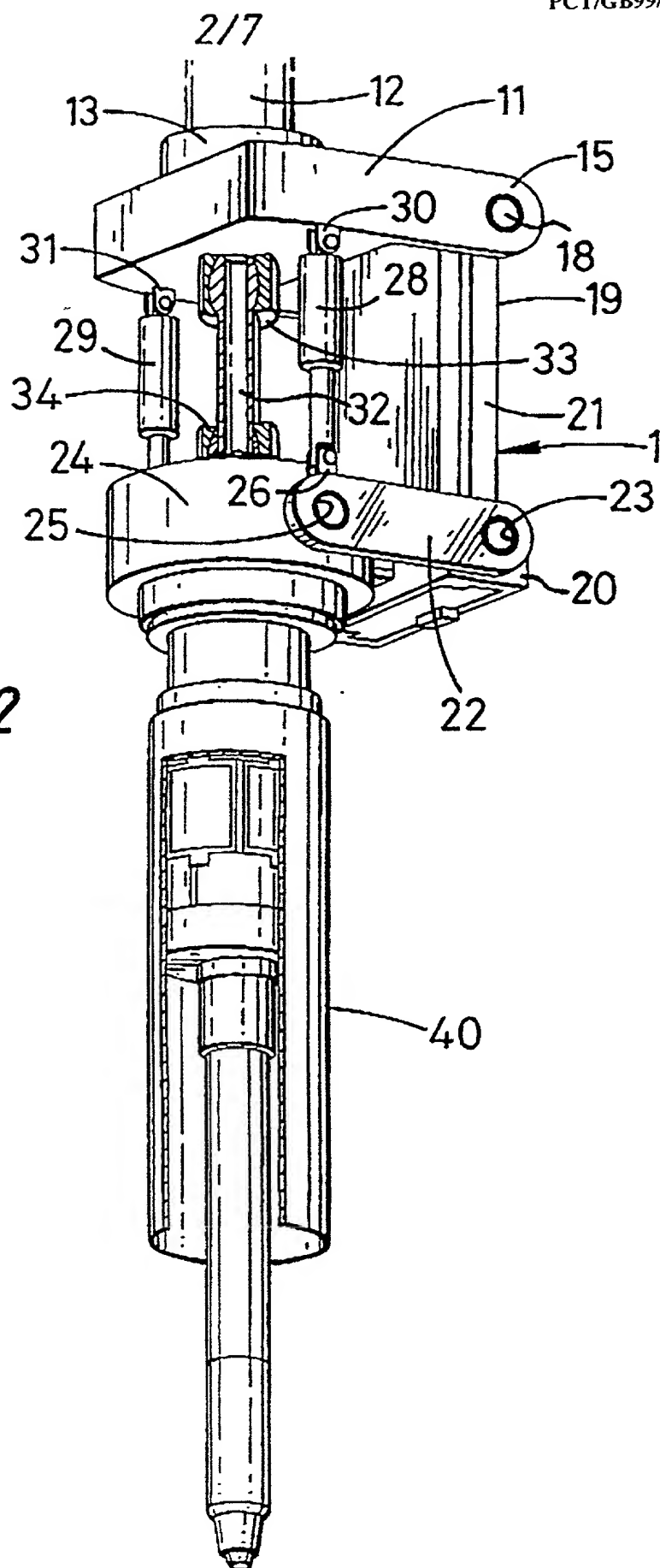
CLAIMS

1. An apparatus for facilitating the connection of tubulars using a top drive, the apparatus comprising a stator (11) attachable to said top drive, and a supporting member
5 (24) for supporting a tool (4) wherein means (1) are provided to allow substantially horizontal movement of said supporting member (24).
2. An apparatus as claimed in Claim 1 or 2, wherein said means (1) also allows substantially vertical movement of said supporting member (24).
- 10 3. An apparatus as claimed in Claim 1 or 2, wherein said means (1) comprises a rigid member (19) arranged between said stator (11) and said supporting member (24) and arranged on at least one axle (18, 18').
- 15 4. An apparatus as claimed in Claim 3, wherein said means (1) comprises at least one arm (22, 22') arranged between said rigid member (19) and said support member (24) and connected thereto by spherical bearings (25, 25').
5. An apparatus as claimed in any of Claims 2 to 4, wherein said means (1)
20 comprises pistons and cylinders (28, 29) arranged between said stator (11) and said supporting member (24) to allow vertical movement of said supporting member (24).
6. An apparatus as claimed in any of Claims 2 to 5, further comprising a slider (20) to facilitate vertical movement of said supporting member (24).

7. An apparatus as claimed in any preceding claim, wherein a mud pipe (32) is arranged between said stator (11) and said supporting member (24).
- 5 8. An apparatus as claimed in Claim 7, wherein said mud pipe (32) is movable in relation to said stator (11) and said supporting member (24) about ball joints (35, 36, 37, 39).
9. An apparatus as claimed in any preceding claim, wherein said supporting
10 member (24) is a hydraulic motor.
10. An apparatus as claimed in any preceding claim including said tool (4).
11. An apparatus as claimed in Claim 10, wherein said supporting member (24) is
15 integral with said tool (4).
12. An apparatus as claimed in Claim 10 or 11, wherein said tool (4) is for gripping a tubular (40).
- 20 13. An apparatus as claimed in any preceding claim including a top drive (3).
14. A method for facilitating the connection of tubulars using a top drive, the method comprising the steps of attaching a tool to the top drive using a supporting

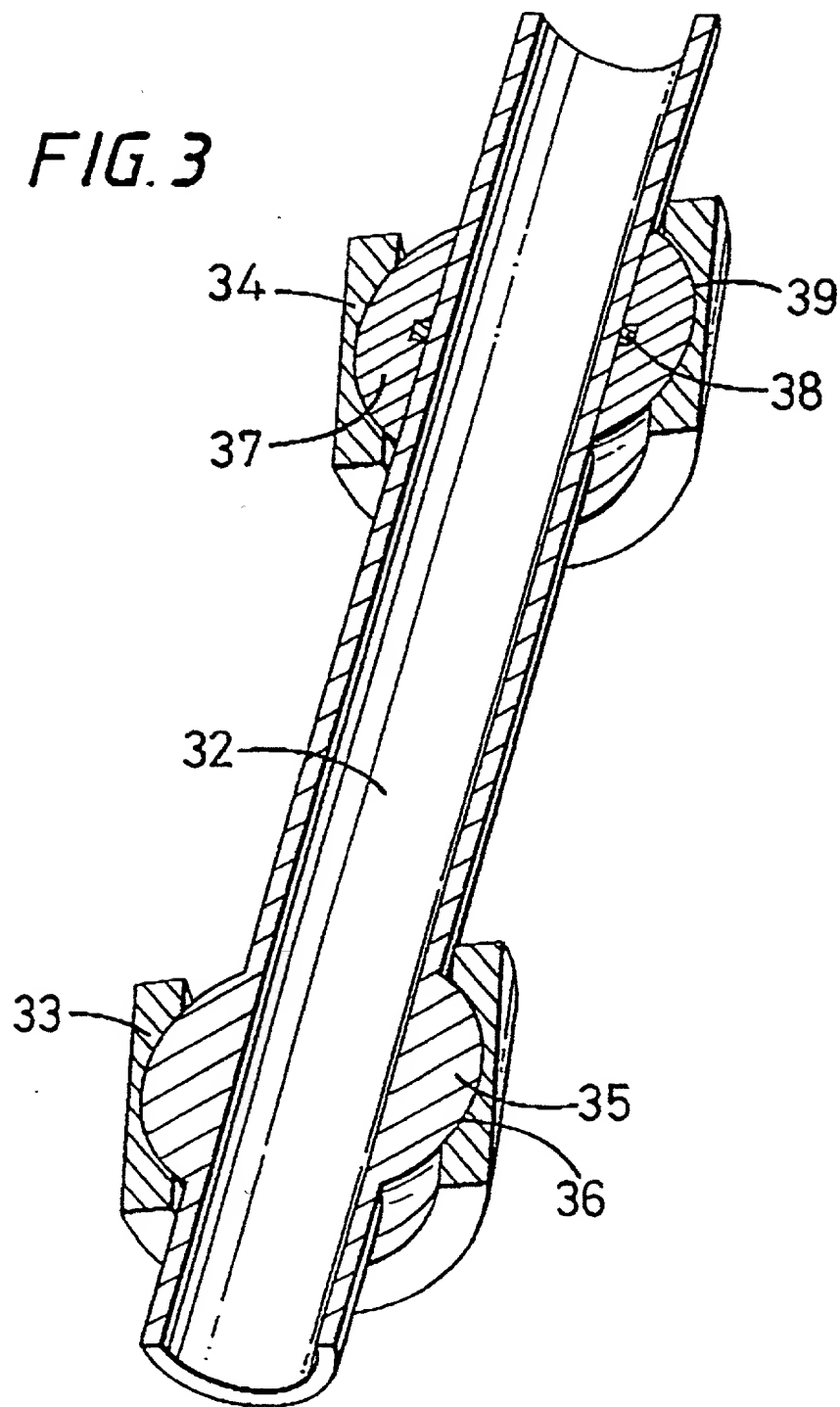
FIG. 1

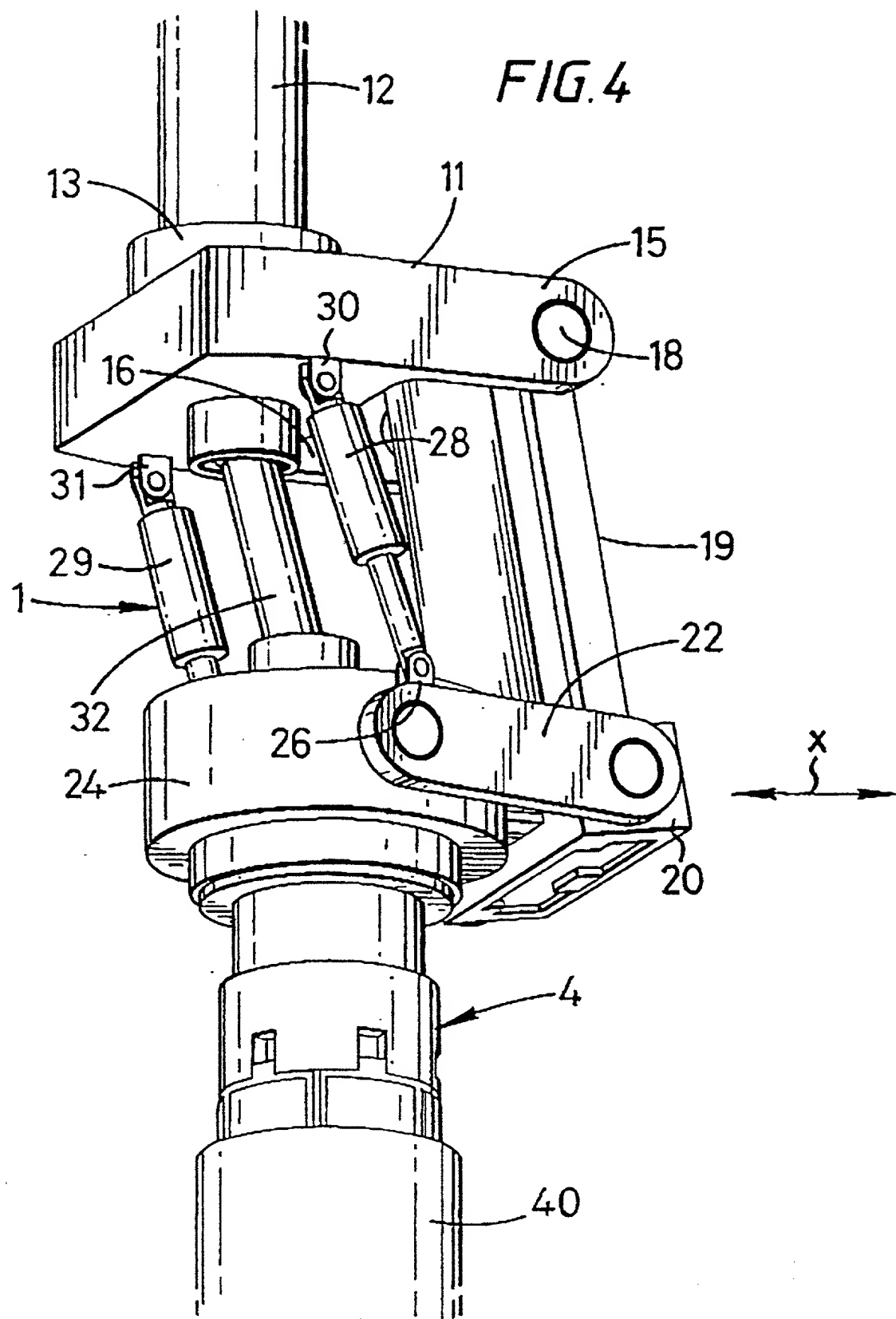




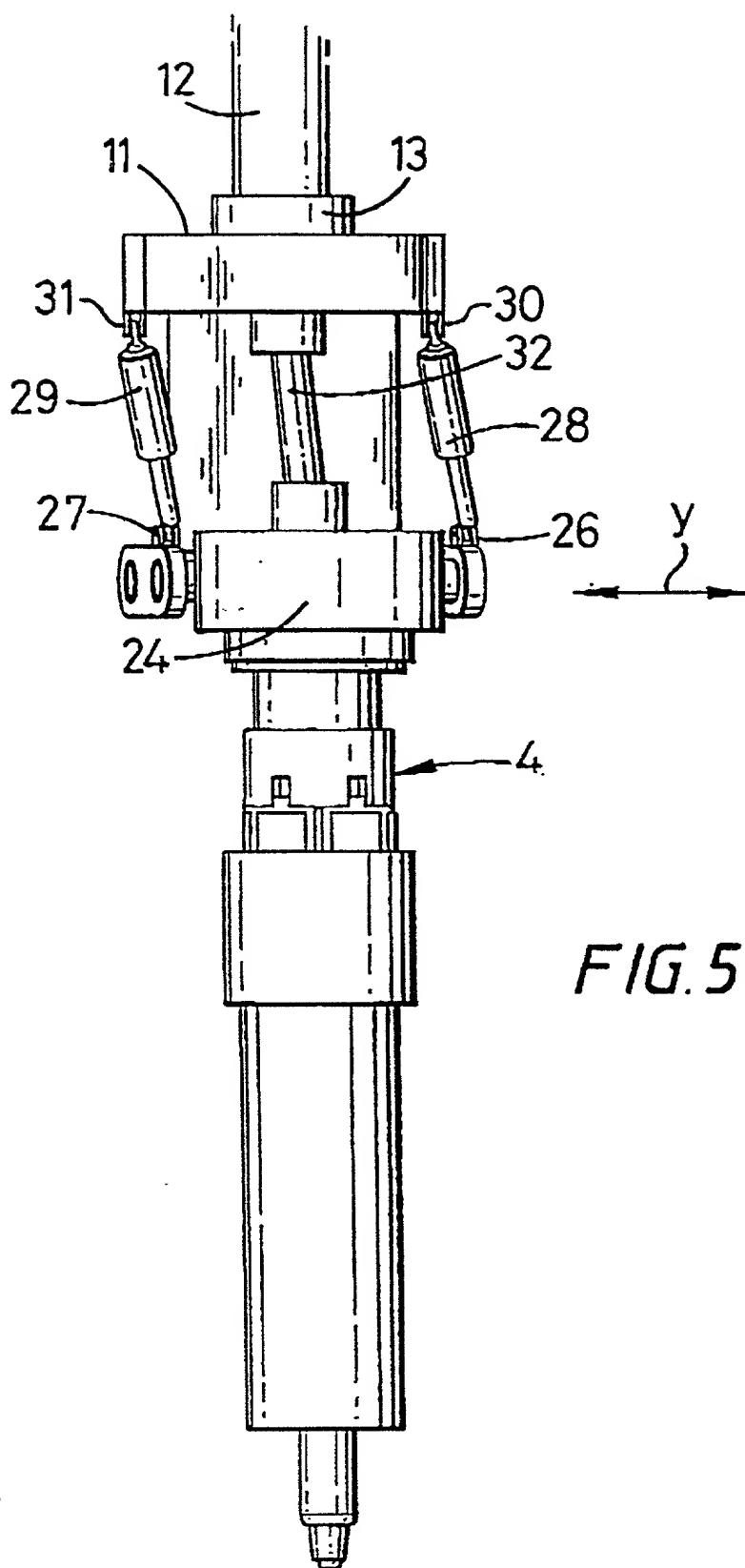
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FIG. 3



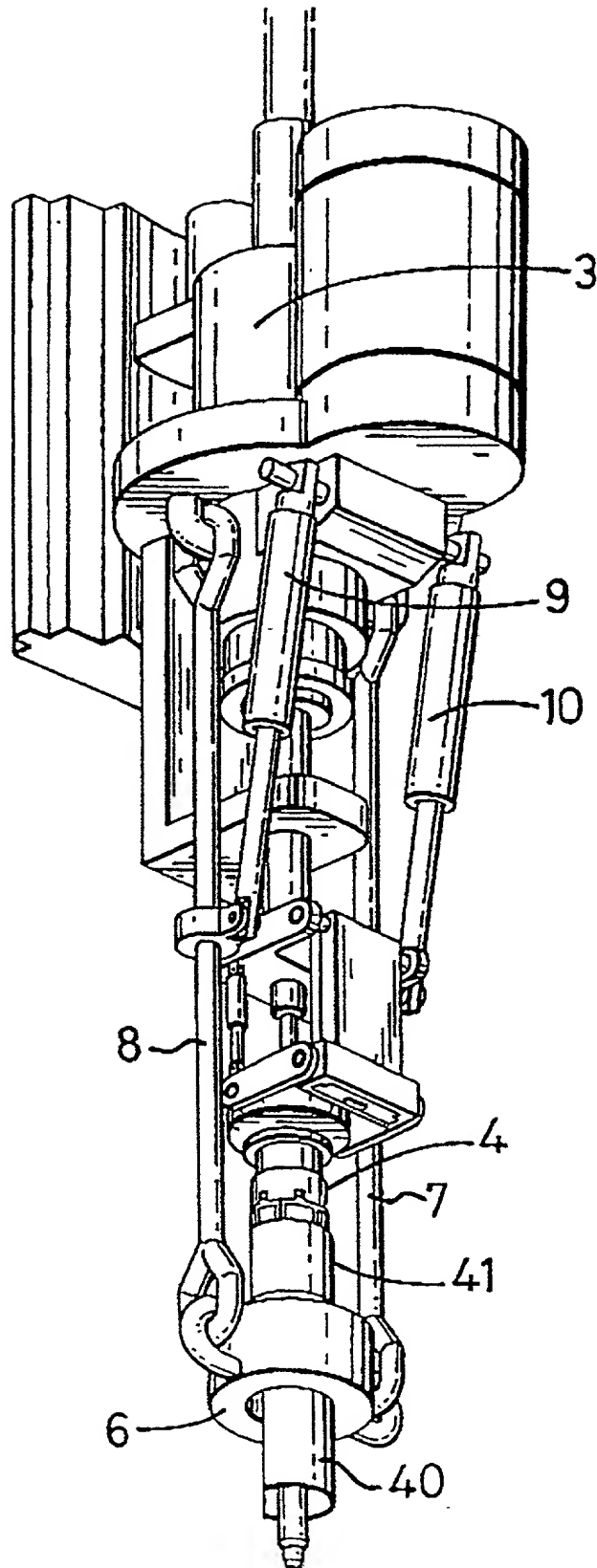


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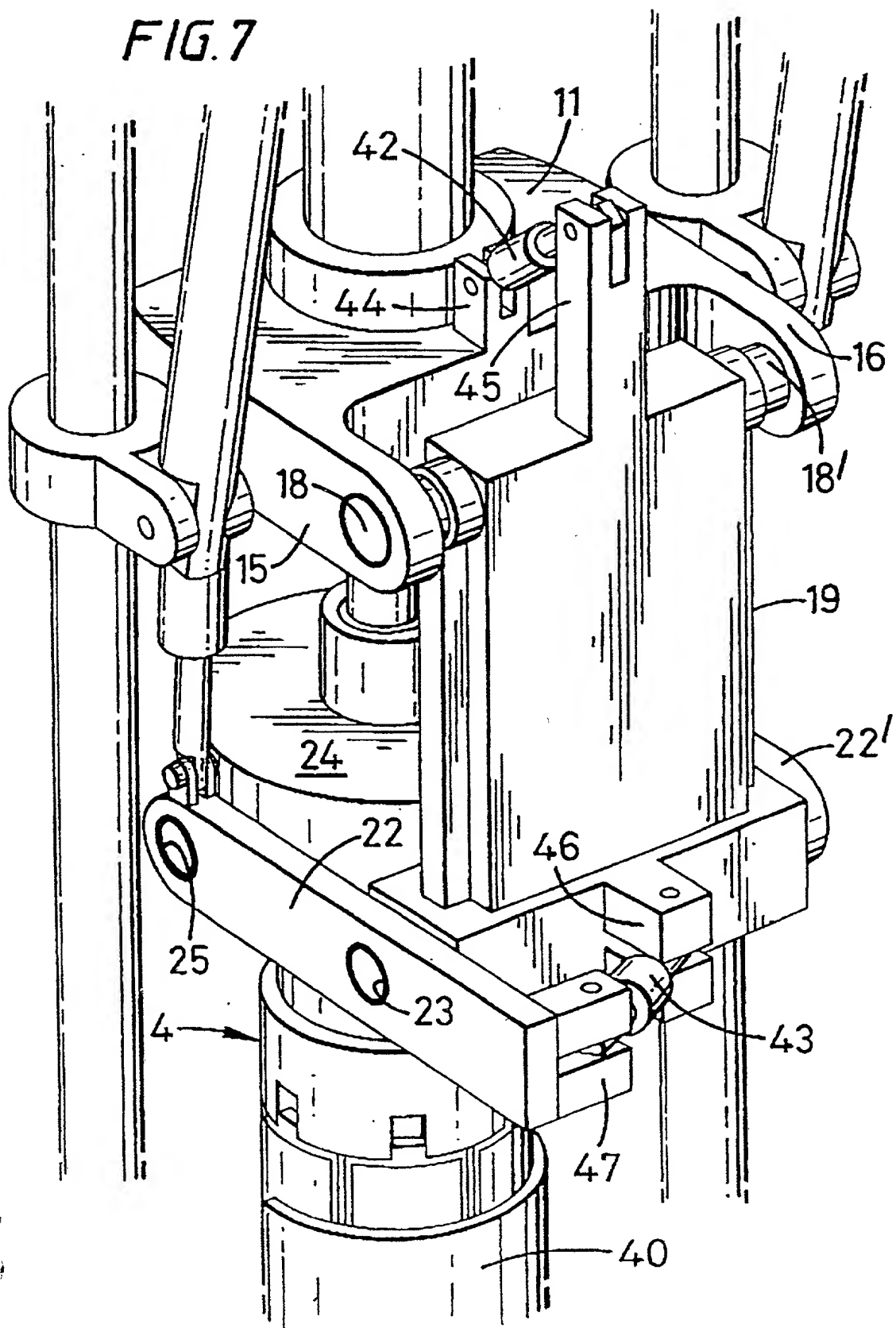
6/7

FIG. 6



7/7

FIG. 7





PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim ~~foreign~~ priority benefits under Title 35, United States Code, §119, of any provisional or foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below, and have also identified below any provisional or foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

- ☐ No such applications have been filed.
☒ Such applications have been filed as follows:

A. Prior foreign/PCT application(s) filed within 12 mos. (6 mos. for design) prior to this application, and any priority claims under 35 USC §119

<u>Country/PCT</u>	<u>Application Number</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
GB ✓	9818363.5 ✓	24 August 1998 ✓	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No

B. All foreign application(s), if any, filed more than 12 mos. (6 mos. for design) prior to this U.S. application

<u>Country/PCT</u>	<u>Application Number</u>	<u>Filing Date</u>
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C. U.S. Provisional Application filed within 12 months prior to this application

<u>Serial Number</u>	<u>Filing Date</u>
----------------------	--------------------

PRIORITY CLAIM (35 USC §120)

I hereby claim the benefit under Title 35, United States Code, §120, of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information that is material to the examination of this application (namely, information where there is substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

- ☐ No such applications have been filed.
☐ Such applications have been filed, as follows:



COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

- ☒ original
- ☐ divisional
- ☐ continuation
- ☐ continuation-in-part

INVENTORSHIP IDENTIFICATION

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHODS AND APPARATUS FOR CONNECTING TUBULARS USING A TOP DRIVE

SPECIFICATION IDENTIFICATION

The specification of which:

- ☐ is filed herewith
- ☐ was filed on _____, under Serial No. _____, executed on even date herewith; or
- ☐ Express Mail No.(as Serial No. not yet known) and was amended on _____ (if applicable)
- ☒ was described and claimed in PCT International Application No. PCT/GB99/02710 filed on August 16, 1999. ✓

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56, and which is material to the examination of this application; namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent.

- ☐ In compliance with this duty there is attached an Information Disclosure Statement in accordance with 37 CFR §1.98.



Serial Number

Filing Date

Patented

Pending

Abandoned

☐
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POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

6-
B. Todd Patterson
Raymond R. Moser, Jr.
Keith M. Tackett
Douglas H. Elliott
William B. Patterson
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DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

1-00 Full name of sole or first inventor:

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